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parallax of the star A was determined by a discussion of the *differences* of its distances from the two stars of comparison. The *sum* of the distances, however, which ought to have been constant, exhibited an annual variation which could not be accounted for by any recognised principle. The hypothesis of this variation being attributable to the influence of temperature upon the different parts of the instrument leads to improbable conclusions. If, however, *one of the stars of comparison* be supposed to have a sensible parallax, the periodic variation disappears, and the observations are represented with considerable accuracy. M. Wichmann has recently executed a new series of observations with the heliometer, and by a discussion of them founded upon this hypothesis he has found the parallax of A to be $0''\cdot68$, and the parallax of *a* to be $1''\cdot15$. The former observations, treated in a similar manner, assign $0''\cdot75$ and $1''\cdot19$ as the parallaxes of the two stars. M. Wichmann's memoir will be found in Nos. 841–844 of the *Astronomische Nachrichten.*

Note on the Mean Density of the Superficial Crust of the Earth.

By M. Plana. (*Ast. Nach.* No. 828.)

The researches of geometers have established, beyond doubt, that the density of the earth increases towards the centre. Assuming the densities of the successive strata to increase in arithmetical progression, Laplace has investigated the constant amount of increase for each successive stratum, and has hence deduced the mean density of the terrestrial spheroid (*Méc. Cél.* tome v. liv. xi.). In his researches on this subject, he supposes the density of the superficial stratum (ϱ) to be three times the density of the sea considered equal to unity. He remarks, that this assumption agrees very nearly with the density of granite. His expression for the density of any stratum is,

$$\varrho = (\varrho)\,(1 + e - e\,a),$$

in which a denotes the radius of the stratum (the mean radius of the superficial stratum being supposed equal to unity), and e the constant quantity by which the depth of each successive stratum, $1 - a$ is to be multiplied conformably to the assumed law of density. Admitting the ellipticity of the earth to be equal to 0·00326, Laplace found the value of e to be 2·349, and hence determined the mean density to be 4·764. This value differs considerably from the results which Reich and Baily have deduced from their experiments with the balance of torsion, the former having obtained 5·44, and the latter 5·6604, for the mean density of the terrestrial spheroid, the density of pure water being supposed equal to unity.

The remarks of Humboldt on the density of the superficial stratum of the earth, contained in the first volume of his *Kosmos*, would seem to imply that the value of this element assumed by Laplace is erroneous. He states, that from the nature of the rocks which constitute the superficial strata of the solid parts of the globe, the

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density of continents is hardly 2·7, and he hence infers, that the mean density of continents and seas taken together does not amount to 1·6. The researches of Plana, contained in the note above referred to, serve to confirm this conclusion. Supposing the ellipticity of the earth to be represented by 0·00326 (1 — 0·008479), he has found that the mean density 5·44, and the initial density 1·6, may be satisfactorily accounted for. The ellipticity derived either from actual measurement or from researches on the lunar theory cannot be regarded as sufficiently trustworthy to render the value here assumed inadmissible. On the other hand, if the ellipticity be supposed equal to 0·00326, the mean density deducible is 4·76; a result which is incompatible with the precision of the experiments made for the purpose of determining this element.

Metis.— Ephemeris of this planet for the opposition of 1853, extending from September 17 to October 31, will be found in the *Ast. Nach.* No. 845.

Lutetia.— For elements and ephemeris, from January 8 to February 25, by M. Bruhns, see *Ast. Nach.* No. 846.

ERRATA.

Vol. XI., Index, page 250, 12 lines from the bottom, read as follows :—

Dawes, Rev. W. R., discovery of the inner dark ring of *Saturn*, on Nov. 29, 1850.. p. 22 *et seq.*
————————, correction of errors in printing the foregoing accounts... 49
Lassell, Mr., observation of the inner or dark ring of *Saturn*, Dec. 3, 1850... 21

Page 254, line 16,—

Saturn, inner dark ring of, discovery of, by Mr. Dawes, on Nov. 29, 1850.. 22, 49
——, ————————, ————, by Mr. Lassell, Dec. 3, 1850 21

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